

to the statement, are "aimed at making the present program as efficient and economical as possible until more lasting action is taken." This is a worthy purpose so long as the larger aims of the program are not sacrificed unnecessarily on the altar of this economic or political expediency.

Elsewhere in this issue the Committee on the Role of Medicine in Society of the CMA draws attention to certain values which the Committee believes should be brought suitably into play whenever such important decisions are made with respect to how much of what resources are to be used in health care. That report suggests that economic efficiency and cost control should always be tempered by scientific values and humanitarian considerations, and that whatever decision is reached should reflect a deliberate and measured interaction of all these values.

Medi-Cal is yet in its infancy. It has the potential of providing truly mainstream health care for the needy and near needy of California and of showing the rest of the nation how this can be done by taking full advantage of the capabilities inherent in the American pluralistic free enterprise system. If we do not believe in this traditional American system we might as well throw the baby out with the bath water and be done with it. It would not survive anyway. But if we do believe in the American system, we should help the Medi-Cal baby to solve its problems, grow up, gain experience, learn from this experience, and ultimately justify the gleam for a truly California solution that was originally in its father's eye.

Erythrocyte Enzyme Defects

WHEN THE CLINICAL investigator attempts to increase our understanding of the biochemical basis of a disease process, he is often frustrated by unavailability of the tissue which is primarily involved. He must depend upon indirect evidence of the metabolic defect such as the accumulation of metabolic products in the plasma or in the urine. Then he may attempt to deduce the biochemical nature of the disorder. If by this means some insight has been gained into the problem, it may be possible to demonstrate the defect in a single, precious piece of biopsy or autopsy material.

In contrast to other internal organs, the red

blood cells are readily "biopsied" and thus it has been possible to approach metabolism of the erythrocyte directly on a scale that has never been possible with any other organ. Several research laboratories have systematically measured the activities of many enzymes in the red cells of patients with anemia.

This issue of CALIFORNIA MEDICINE contains an impressive review by Valentine of some of the extensive information of this kind which has been obtained. No less than 12 enzymatic defects leading to hemolytic disease have already been described, and one of these, glucose-6-P dehydrogenase deficiency, can be further separated into at least 17 subtypes. It is noteworthy that the impressive catalogue of enzyme defects which lead to hematologic disease represents the result of work of scarcely more than the past decade. Perhaps we may take some justifiable parochial pride in the fact that almost one-half of all of the enzyme defects which are now recognized to lead to hemolytic disease were first described in California in Valentine's laboratory.

Although Valentine has reviewed only the red cell enzyme defects which lead to hemolytic anemia, enzyme defects which produce important clinical effects in other parts of the body may also be reflected in the erythrocytes. Notable among these is galactosemia, in which red cells, in common with other body cells, lack galactose-1-phosphate uridyl transferase activity. Although this disease does not produce important hematologic abnormalities, it is most readily diagnosed by the study of erythrocytes. Acatalasemia, a disorder which may be associated with a peculiar form of oral gangrene, is also most readily diagnosed by examination of erythrocytes. Studies of orotic acid metabolism in peripheral blood erythrocytes were instrumental in uncovering the deficiencies in orotidyl decarboxylase and orotidyl pyrophosphorylase which characterize orotic aciduria.

The findings which are reviewed demonstrate how extraordinarily fruitful biochemical investigation can be in the study of human disease. It is likely that as techniques for safely obtaining tissue from other internal organs are improved, similar progress may be made in the biochemical basis of diseases affecting other organs. In addition, the study of erythrocytes will continue to prove useful in the investigation of disorders of other organ systems in which the red cell may serve as a convenient mirror of the defects found elsewhere.